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Amendments to the Claims:

Kindly amend Claims 1, 7-14, 17-19, 23-39, 18 and 37 and 41-47.

Kindly cancel claim 48.

Kindly add new Claims 49-53.

1. (Currently Amended) An imaging device for capturing optical image data, the device comprising:

an imager for generating an image signal;  
a memory component that receives the image signal from the imager and stores the image signal as image data; and  
a processor that executes an exposure control routine by implementing a first software-exclusive module that controls the exposure and gain setting in the imager and a second software-exclusive module that implements computations in response to exposure data transmitted from the first software-exclusive module to determine a targeted exposure and gain setting.

2. (Original) The imaging device of Claim 1, wherein the imager generates the image signal from multi-dimensional symbologies.

3. (Original) The imaging device of Claim 1, wherein the processor provides the imaging device with multi-tasking capabilities.

4. (Original) The imaging device of Claim 1, wherein the processor executes at least one application program of the imaging device.

5. (Previously Presented) The imaging device of Claim 1, wherein the processor executes an operating system of the imaging device.

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6. (Original) The imaging device of Claim 1, wherein the processor executes at least one application program and an operating system of the imaging device.

7. (Currently Amended) The imaging device of Claim 1, wherein the first software-exclusive module is implemented in a high priority thread.

8. (Currently Amended) The imaging device of Claim 1, wherein the first software-exclusive module is implemented in a high priority task.

9. (Currently Amended) The imaging device of Claim 1, wherein the first software-exclusive module is implemented in an interrupt service routine.

10. (Currently Amended) The imaging device of Claim 1, wherein the second software-exclusive module is implemented in a low priority thread routine.

11. (Currently Amended) The imaging device of Claim 1, wherein the second software-exclusive module is implemented in a low priority task routine.

12. (Currently Amended) The imaging device of Claim 1, wherein the second software-exclusive module comprises histogram processing.

13. (Currently Amended) The imaging device of Claim 1, wherein the first software-exclusive module is implemented in an interrupt service routine and the second software-exclusive module is implemented in a low priority task routine.

14. (Currently Amended) The imaging device of Claim 1, further comprising a Direct Memory Access (DMA) controller that receives the image signals from the imager, responds to an image capture command from the second software-exclusive module and transfers captured image signals into the memory component.

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15. (Original) The imaging device of Claim 14, wherein the processor comprises the DMA controller.

16. (Original) The imaging device of Claim 1, further comprising a programmable logic device that serves as an interface between the imager and the processor.

17. (Currently Amended) The imaging device of Claim 16, wherein the programmable logic device comprises a DMA controller that receives the image signals from the imager, responds to an image capture command from the second software-exclusive module and transfers captured image signals into the memory module.

18. (Currently Amended) An imaging device for capturing optical image data, the device comprising:

- an imager for generating an image signal;
- a memory component that receives the image signal from the imager and stores the image signal as image data; and
- a processor that implements a high priority software-exclusive module for real time control of the imager and a lower priority software-exclusive module that examines the image signal and provides feedback to the high priority software-exclusive module routine.

19. (Currently Amended) A method for exposure control in a multi-dimensional imaging device, the method comprising:

- generating, at an imager, an end of frame signal;
- executing, at a central processor, a first software-exclusive module that controls exposure and gain settings in the imager in response to the end of frame signal;
- generating, in the first software-exclusive module, a captured contrast setting, wherein contrast is defined as the product of the exposure setting and the gain setting;

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executing, at the central processor, a second software-exclusive module that calculates a target contrast setting in response to the end of frame signal, the captured contrast setting and stored image data;

generating, in the first software-exclusive module, a subsequent exposure and gain setting for the imager in response to the target contrast setting; and  
implementing the subsequent exposure and gain setting in the imager.

20. (Previously Presented) The method of Claim 19, wherein the central processor is additionally responsible for executing at least one imaging device application program.

21. (Original) The method of Claim 19, wherein the central processor is additionally responsible for executing an image device operating system.

22. (Previously Presented) The method of Claim 19, wherein the central processor is additionally responsible for executing at least one imaging device application program and an imaging device operating system.

23. (Currently Amended) The method of Claim 19, wherein executing, at a central processor, a first software-exclusive module that controls exposure and gain settings in the imager in response to the image signal further comprises executing the first software-exclusive module in a high priority thread routine.

24. (Currently Amended) The method of Claim 19, wherein executing, at a central processor, a first software-exclusive module that controls exposure and gain settings in the imager in response to the image signal further comprises executing the first software-exclusive module in a high priority task routine.

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25. (Currently Amended) The method of Claim 19, wherein executing, at a central processor, a first software-exclusive module that controls exposure and gain settings in the imager in response to the image signal further comprises executing the first software-exclusive module in a interrupt service routine.

26. (Currently Amended) The method of Claim 19, wherein executing, at the central processor, a second software-exclusive module that calculates a target contrast setting in response to the image signal and the captured contrast setting further comprises executing the second software-exclusive module in a low priority thread routine.

27. (Currently Amended) The method of Claim 19, wherein executing, at the central processor, a second software-exclusive module that calculates a target contrast setting in response to the image signal and the captured contrast setting further comprises executing the second software-exclusive module in a low priority task routine.

28. (Currently Amended) The method of Claim 19, wherein executing, at the central processor, a second software-exclusive module that calculates a target contrast setting in response to the end of frame signal and the captured contrast setting further comprises implementing histogram processing to calculate a target contrast setting.

29. (Currently Amended) A program storage device readable by a processor, tangibly embodying a program of instructions executable by the processor to perform a method for exposure control in a multi-dimensional imaging, the method comprising:

generating, in a high priority software-exclusive module, a captured contrast setting in response to an end of frame signal from an imager, wherein contrast is defined as the product of exposure setting and gain setting;

calculating, in a low priority software-exclusive module, a target contrast setting in response to the end of frame signal from the imager, the captured contrast setting and stored image data;

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generating, in the high priority software-exclusive module, a subsequent exposure and gain setting for the imager in response to the target contrast setting; and  
implementing the subsequent exposure and gain setting in an imager of the multi-dimensional imaging device.

30. (Currently Amended) The program storage device of Claim 29, wherein generating, in a high priority software-exclusive module, a captured contrast setting in response to an end of frame signal from an imager and generating, in the high priority software-exclusive module, a subsequent exposure and gain setting for the imager in response to the target contrast setting further comprises generating in an interrupt service routine module.

31. (Currently Amended) The program storage device of Claim 29, wherein generating, in a high priority software-exclusive module, a captured contrast setting in response to an end of frame signal from an imager and generating, in the high priority software-exclusive module, a subsequent exposure and gain setting for the imager in response to the target contrast setting further comprises generating in a high priority thread module.

32. (Currently Amended) The program storage device of Claim 29, wherein generating, in a high priority software-exclusive module, a captured contrast setting in response to an end of frame signal from an imager and generating, in the high priority software-exclusive module, a subsequent exposure and gain setting for the imager in response to the target contrast setting further comprises generating in a high priority task module.

33. (Currently Amended) The program storage device of Claim 29, wherein calculating, in a low priority software-exclusive module, a target contrast setting in response to the end of frame image signal from the imager, the captured contrast setting and stored image data further comprises calculating in a low priority task module.

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34. (Currently Amended) The program storage device of Claim 29, wherein calculating, in a low priority software-exclusive module, a target contrast setting in response to the end of frame image signal from the imager, the captured contrast setting and stored image data further comprises calculating in a low priority thread module.

35. (Currently Amended) The program storage device of Claim 29, wherein calculating, in a low priority software-exclusive module, a target contrast setting in response to the end of frame image signal from the imager, the captured contrast setting and stored image data further comprises implementing histogram processing to calculate a target contrast setting.

36. (Currently Amended) The imaging device of Claim 1, wherein the second software-exclusive module implements computations in response to exposure data transmitted from the first software-exclusive module and image data transmitted from the memory component.

37. (Currently Amended) An imaging device for capturing optical image data: the device comprising:

- an imager for generating an image signal;
- a memory component that receives the image signal from the imager and stores the image signal ~~[[is]]~~ as image data; and
- a multi-tasking operating system that implements a multi-tasked software-exclusive exposure control routine.

38. (Currently Amended) The imaging device of Claim 37, wherein the multi-tasked software-exclusive exposure control routine further comprises a first software-exclusive module that controls the exposure and gain setting in the imager and a second software-exclusive module that implements computations in response to exposure data transmitted from the first software-exclusive module to determine a targeted exposure and gain setting.

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39. (Currently Amended) The imaging device of Claim 38, wherein the second software-exclusive module implements computations in response to exposure data transmitted from the first software-exclusive module and image data transmitted from the memory component.

40. (Previously Presented) The imaging device of Claim 37, wherein the multi-tasking operating system is controlled by a processor within the imaging device that executes all of the imaging device multi-tasking applications.

41. (Currently Amended) The imaging device of Claim [[37]] 38, wherein the first software-exclusive module is implemented in a high priority thread.

42. (Currently Amended) The imaging device of Claim [[37]] 38, wherein the first software-exclusive module is implemented in a high priority task.

43. (Currently Amended) The imaging device of Claim [[37]] 38, wherein the first software-exclusive module is implemented in an interrupt service routine.

44. (Currently Amended) The imaging device of Claim [[37]] 38, wherein the second software-exclusive module is implemented in a low priority thread routine.

45. (Currently Amended) The imaging device of Claim [[37]] 38, wherein the second software-exclusive module is implemented in a low priority task routine.

46. (Currently Amended) The imaging device of Claim [[37]] 38, wherein the second software-exclusive module includes histogram processing.



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47. (Currently Amended) The imaging device of Claim [[37]] 38, wherein the first software-exclusive module is implemented in a an interrupt service routine and the second software-exclusive module is implemented in a low priority task routine.

48. (Cancelled)

49. (New) A barcode imaging device for capturing information, the device comprising:

an optics imaging system that captures an image of a two-dimensional barcode data symbol;

an imaging sensor in communication with the optics imaging system that receives the image from the optics imaging system and converts the image to an electrical signal representative of image data;

a memory storage element in communication with the sensor that stores the image data; and

a central processing unit (CPU) in communication with the imaging system, the imaging sensor and the storage element, wherein the CPU implements a multitasking operating system that executes a first software-exclusive module that provides imaging system control processing and a second software-exclusive module that recognizes and decodes the image data.

50. (New) The device of Claim 49, wherein the multi-tasking operating system implemented by the CPU of the barcode imaging device further executes a third software-exclusive module that performs calculations on the image data.

51. (New) The device of Claim 49, wherein the first software-exclusive module is further defined as controlling imager exposure time.

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52. (New) The device of Claim 49, wherein the first software-exclusive module is further defined as synchronized with timing of the imager.

53. (New) The device of Claim 49, wherein the barcode imaging device is further defined as a portable barcode imaging device.